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SKC

Pocket Pump Air Sampling Pump

Operating Instructions

This manual covers the following models:

210-1002MTX , 210-1003MTX

Purchase Details and Service History

Thank you for choosing an SKC product. Your purchase is covered by our warranty, details of which can be found inside the rear cover of this manual.

Product Model Number	Product Serial Number	Date of Purchase

SKC recommends annual servicing of this product. The first service is due one year from the date of purchase, and then at yearly intervals on this date.

Service	Date	Service	Date	Service	Date
1		5		9	
2		6		10	
3		7		11	
4		8		12	

Please note that SKC Ltd are the only authorised service centre in the UK, guaranteeing you access to the full range of genuine SKC replacement parts. For all other areas a full list of SKC approved distributors and service centres can be found at www.skcltd.com

SKC UK service centre - Tel: +44 (0)1258 480188 Fax: +44 (0)1258 480184 Email: info@skcltd.com

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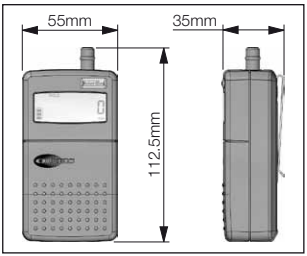
The Pocket Pump MTX air sampling pump range

- Complies with the EC ATEX Directive 94/9/EC on equipment intended for use in potentially explosive atmospheres, as intrinsically safe to Ex ia M1 and Ex ia IIB T4, for use in Europe.
- EC type examination certificate: INERIS 03 ATEX 0177X.
- European (EN) standards applied: Refer to Intrinsic Safety Certification on pages 34 to 44.
- The equipment may be used in zones 0, 1 and 2 with flammable gases and vapours with apparatus groups IIA & IIB and with temperature classes T1,T2,T3,T4.
- The equipment is only certified for use in ambient temperatures in the range -20 to +40°C and should not be used outside this range.
- The battery pack should not be charged in a hazardous area.
- Use only SKC approved chargers designated for the model.
- The equipment has not been assessed as a safety related device (as referred to in Directive 94/9/EC Annex II, clause 1.5).
- The equipment should not be used if damaged in a way that could invalidate intrinsic safety. Such defects might include cracking of the battery pack enclosure and internal encapsulant such that internal components or cells are exposed.

Important note about intrinsic safety

If you are unsure as to whether the Universal pump you have purchased is suitable for your environment, check with your site manager or responsible person BEFORE USE that the intrinsic safety rating on the product meets your site requirements. SKC personnel are unable to recommend the appropriate safety rating for your site.

All models



- Weight: 170 g
- Casing IP rating: IP20
- Constant Flow Mode:
  1) Flow range: 20 - 225 ml/min
  2) Compensation range: 0 - 20 inches of water at 20 - 225 ml/min flow
  3) Flow compensation accuracy: ±5% of flow set point
- Constant Pressure Mode:
  1) Pressure range: 1 - 20 inches of water
  2) Pressure control accuracy: ±0.5 inches of water (±0.25 mmHg)
- Timer display: 0 to 9999 minutes
- Timer accuracy: ±1%
- Battery pack: NiMH rechargeable, 1.0 Ah, 2.4 V
- Charging time: up to 6 hours (battery fitted to pump) / up to 16 hours (battery only)
- Charging temperature: 0 to +45°C
- Storage & operating temperature: -20°C to +40°C
- Operating humidity: 0 to 95% RH
- Typical run times:

Back Pressure	Run Time		
	Flow = 20 ml/min	Flow = 100 ml/min	Flow = 200 ml/min
10 inches of water	14 hours	13 hours	11 hours
20 inches of water	12 hours	12 hours	10 hours

Note: Run times quoted are based on a new, fully charged battery.

Pump Features	
Battery charging options	SKC offer two battery charger options for the Pocket Pump MTX series pumps, a single charger (Part No. 223-229A) and a five station charger (Part No. 223-107A). When the battery pack is fitted into the pump, a fast charge mode is enabled providing a charge time of up to 6 hours. If the battery is charged external to the pump then the charge time will be up to 16 hours.
Mains power option	The 223-229A single charger model can also be used as a mains adaptor to run the pump for indefinite periods whilst connected to the electrical mains supply. Note that it is recommended to ensure that the battery is fully charged prior to commencing sampling. **Warning - The pump must not be used in potentially explosive areas when the charger is connected.**
Keypad cover	The pump controls are situated beneath a sliding cover to prevent accidental actuation of the keypad during a sample run.
LCD screen	LCD screen indicates run-time data, operating and fault modes and battery charge state.
Constant flow mode	Provides compensated constant flow control for single tube sampling applications.
Constant pressure mode	Provides constant pressure control for multiple tube sampling applications.
Sample hold function	Enables pausing and restarting of the pump during a sample.
Low battery shutdown	Automatic pump shutdown in the event of a low battery condition. The low battery shutoff voltage is selected to prevent over-discharge of the battery which can cause degradation of the battery performance. The pump retains the run-time data in the event of a low battery shutdown.

Pump Features	
Flow fault function	Indicates flow fault due to obstructed tubing or excessive filter loading. Shuts the pump down and enters 'HOLD' mode if the condition persists for longer than 15 seconds. Automatically attempts to restart every five minutes, until the flow fault condition clears in which case normal running will resume.
Particulate trap	Built in replaceable filter to trap particles that would otherwise contaminate the pump mechanism.
PC Connectivity	With optional DataTrac® interface and PC software. Enables programming of timed sample runs, delayed starts and intermittent sampling. Enables retrieval of pump run-time data and history to the PC.
Twin port model available	The 210-1003MTX twin port Pocket Pump includes an exhaust port enabling the pump to be used for sample bag filling and similar applications.

1) Pump Models

210-1002MTX	Standard ATEX approved pump with NiMH battery pack
210-1003MTX	Twin port ATEX approved pump with NiMH battery pack

2) Care of Pocket Pump MTX Series Pumps

- Always use the correct SKC battery pack and battery chargers designated for the Pocket Pump MTX series pumps.
- Never run the pump long term without a tube or filter medium in place.
- When carrying out sampling using long term colour change tubes always use a tandem tube holder with trap tube (Part No. 222-3D-2 and cover 224-29T). This will prevent the aggressive fumes generated by these tubes from entering and damaging the pump mechanism.
- The Pocket Pump MTX series pump cases are IP20 rated, they are not rated as water or splashproof and therefore must not be used where it is possible for water to enter the pump casing.
- Pocket Pump MTX series pumps are fitted with a particulate filter which is easy to replace. For general maintenance replace the filter every 2-3 months or if it appears dirty. New filters are white in colour (order Part No. P40010).
- If the sampling methodology to be used requires the collection of the sample from the outlet of the pump (210-1003MTX twin port model only), i.e. the sample is passing through the pump mechanism, ensure that the sample air is dry and does not contain corrosive constituents. Failure to do so could lead to contamination of the pump mechanism, degradation of performance or even failure of the pump.

Warning - Failure to follow these guidelines will void the product warranty.

3) Non ATEX Certified Variants of the Pocket Pump

The Pocket Pump is also produced in a variant range which is UL certified for intrinsic safety and these pumps are therefore not suitable for use in potentially explosive atmospheres in Europe where ATEX approval is mandatory.

Pump components vary between the UL and ATEX certified variants, therefore components must not be interchanged between these pumps. If in any doubt please contact SKC Ltd customer services for advice.

4) Sampling Methods

This instruction manual provides the necessary information to set up and operate the Pocket Pump MTX series pumps. For more detailed information on specific sampling methods please refer to SKC's Step-By-Step Guide to Air Sampling (Part No. 224-G1). To obtain a free copy please contact SKC Ltd customer services on +44 (0) 1258 480188 or download at www.skcltd.com.

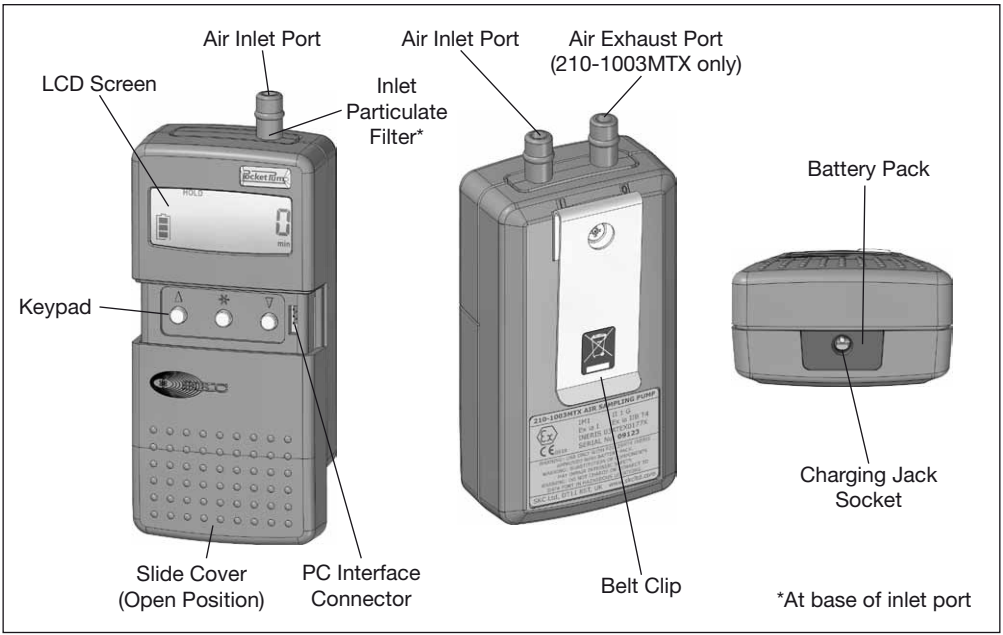
5) The WEEE Directive

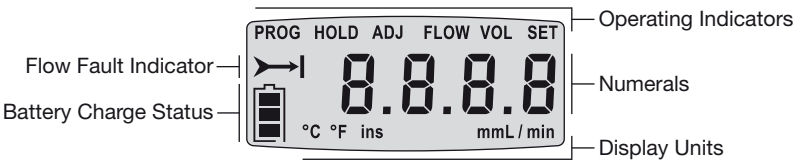
This product is marked with the crossed out wheelie bin symbol, which identifies that it falls within the scope of the EC Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). At the end of it's useful life, this product must be disposed of in an environmentally sound way as detailed in the Directive. Note that the battery pack must be separated from the pump and disposed of as detailed in the Batteries Directive (see below). Please contact your local distributor or SKC Ltd for further details on how to comply with the requirements of the WEEE Directive. SKC Ltd's producer registration number is WEE/KH0054TQ.

6) The Batteries Directive

The NiMH battery pack supplied with this pump and any spare battery packs purchased for it, fall within the scope of the EC Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators. At the end of the battery pack's life it must be disposed of in an environmentally sound way as detailed in the Directive. Please contact your local distributor or SKC Ltd for further details on how to comply with the requirements of the Batteries Directive. SKC Ltd's batteries producer registration number is BPRN00454.

Diagram of the Pocket Pump





Operating Indicators	
PROG	Active when a program is loaded into the pump memory using the DataTrac interface and software
HOLD	Flashes when the pump is the HOLD state
ADJ	Flashes when adjusting the pump flow rate during flow calibration
FLOW	Active when the pump LCD screen displays the flow rate
VOL	Active when the pump LCD screen displays the volume of air sampled
SET	Flashes when setting the pump flow rate or back pressure setting

Display Units	
°C or **°F**	Sample air temperature in degrees Centigrade or Farenheit (Enhanced Display Mode only)
ins or **mm**	Pump back pressure in inches of water or millimetres of mercury (Enhanced Display Mode only)
mL/min	Pump flow rate in millilitres per minute
mL or **L**	Total volume of air sampled in millilitres or litres since last reset
min	Run time in minutes since last reset

1) Charging the Battery Pack

Prior to first use the battery pack should be fully charged, ideally overnight.

The Pocket Pump MTX series pumps must only be charged using the correct SKC chargers (Part Nos. 223-229A - single charger, 223-107A - five station charger).

The chargers are supplied with mains input plugs suitable for use in the UK, Europe, USA and Australia / New Zealand. Select the correct mains input plug and fit it to the charger.

Plug the charger output jack plug into the mating socket at the base of the pump. Plug the charger into the electrical mains supply and switch on the power. The LED indicator on the charger will illuminate to indicate that the battery pack is connected.

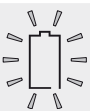
The battery status icon on the pump LCD screen will flash to indicate that charging is taking place. Depending on the charge state of the battery at the start of charging it will take up to six hours to fully charge the battery. The Pocket Pump includes an intelligent charging circuit which detects when the battery pack is fully charged, therefore charging may complete in less than six hours. When full charge has been detected the pump automatically switches to a trickle charging mode.

At the end of charging the battery status icon will be on (not flashing) and showing three bars to indicate full charge. If the battery icon remains flashing after six hours, this indicates a charging error. It is recommended to disconnect and reconnect the charger, and if this condition persists after a further six hours of charging, it would indicate a fault with the battery pack or charger. Contact SKC Limited customer services for further advice.

When fully charged disconnect the charger jack plug from the battery pack.

2) Battery Status Indicator

The battery status indicator on the pump LCD screen shows the current battery charge level:

	Fully charged. 3 bars displayed from approximately 100% to 75% capacity. Note: It is strongly recommended to ensure that the battery is fully charged before starting a sample run.
	2 bars displayed from approximately 75% to 25% capacity.
	1 bar displayed below approximately 25% capacity.
	Low battery. No bars and flashing outline indicates low battery. Pump automatically switches to HOLD mode, and then SLEEP mode after 1 minute.
	Battery charging. When the battery charger is connected, the battery status indicator flashes all 3 bars to indicate charging. At the end of charging the battery status indicator will stop flashing and show 3 bars continuously.
	Battery charging error. Bottom 2 bars showing continuously and top bar flashing at the end of charging indicates a charging error. Disconnect and reconnect the charger. If the error persists, this may indicate a fault with the pump, battery pack or the charger. Contact SKC Limited customer services for assistance.

3) Accessing the Pump Keypad

To access the pump keypad, slide the slide cover downwards until the buttons are exposed.

4) Operating the Three Button Keypad

The Pocket Pump operates by pressing various sequences of the three keypad buttons:

Star Button - ✳

- Scrolls through run time data on the LCD screen.
- Sets up the pump operating parameters when used with other buttons.

Up and Down Arrow Buttons - ▲▼

- Increases or decreases either the flow rate (in constant flow mode) or the pump back pressure (in constant pressure mode) during setup.

Underlined Sequence - ✳▲▲✳

- All buttons in the sequence must be pressed consecutively within 10 seconds of the previous command.

Bracketed Sequence - [▼✳]

- All buttons within the brackets must be pressed simultaneously.

Security code - ✳▲▼✳

- The security code sequence is required to access the operating parameters, thus preventing unauthorised changes to the parameters and flow rate or back pressure settings.

5) SLEEP Mode

If the pump is left in HOLD mode for longer than five minutes the pump will automatically set itself to a low

power SLEEP mode, with the LCD screen switched off. To wake the pump from SLEEP mode simply press any of the three buttons and the pump LCD screen will display the pump serial number followed by the internal software version number before switching to HOLD mode.

The pump will also automatically wake from SLEEP mode when the battery charger is connected.

6) HOLD and RUN Modes

To switch from HOLD mode to RUN mode press [▲▼]. The pump will start to run and the run-time data will be updated continuously in memory.

To switch from RUN mode to HOLD mode press [▲▼]. The pump will stop and retain the run-time data in memory. The temperature and back pressure readings are still active in HOLD mode, and can be displayed on the LCD screen (in Enhanced Display mode).

7) Flow Fault

If pump operation is interrupted due to blocked or restricted flow, the flow fault indicator ➙| will flash. If the flow fault persists for 15 seconds the pump will stop and switch to HOLD mode, with the flow fault indicator on continuously. The pump will then wait 5 minutes before automatically switching to RUN mode to continue sampling. If the flow remains restricted the pump will return to HOLD mode, and attempt to restart every 5 minutes.

The accumated run time and and sample volume readings are not updated whilst the pump is in flow fault.

8) Resetting the Run-Time Data to Zero

To clear the run-time data including elapsed run time and accumulated sample volume, the following sequence is required:

With the pump running, press [▲▼] to switch to HOLD mode, press ✳▲▼✳, and then ✳✳.

The LCD screen will briefly show the pump serial number, the internal software version number and then the elapsed run time at 0 min.

8) Switching Between Constant Flow and Constant Pressure Modes

The Pocket Pump is shipped set up in Constant Flow mode. To switch from Constant Flow mode to Constant Pressure mode and vice versa the following sequence is required:

With the pump running, press [▲▼] to switch to HOLD mode, press ✳▲▼✳, and then ✳▼▲✳.

9) Switching Between Standard and Enhanced Display Modes

The Pocket Pump is shipped set up in Standard Display mode. In order to view all of the available run-time data the pump must be switched to Enhanced Display mode, using the following sequence:

With the pump running, press [▲▼] to switch to HOLD mode, press ✳▲▼✳, and then ✳▲▲✳.

To revert to Standard Display mode from Extended Display mode the following sequence is required:

With the pump running, press [▲▼] to switch to HOLD mode, press ✳▲▼✳, and then ✳▼▼✳.

10) Changing the Temperature Display Units

To change the temperature display units from °C to °F and vice versa, ensure that the pump is in Enhanced Display mode and enter the following sequence:

With the pump running, press [▲▼] to switch to HOLD mode, press ✳▲▼✳, and then [✳▼].

11) Changing the Back Pressure Display Units

To change the temperature display units from inches of water to millimetres of mercury and vice versa, ensure that the pump is in Enhanced Display mode and enter the following sequence:

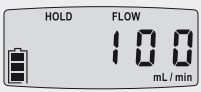
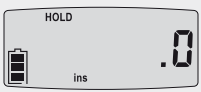
With the pump running, press [▲▼] to switch to HOLD mode, press ✳▲▼✳, and then [▲✳].

Constant Flow mode provides compensated flow control for single sorbent tube sampling applications.

Ensure that the pump is set to Constant Flow mode before carrying out sampling.

1) Viewing the Run-Time Data

Press ✳ to scroll through the available run-time data screens:

	Elapsed run time since last reset in minutes up to 9999 minutes (approximately 1 week). Above 9999 minutes display reverts to 0 minutes and continues to count.
	Flow rate in millilitres/minute.
	Accumulated sample volume since last reset in millilitres or litres up to 9999 litres.
	Pump back pressure in inches of water or millimetres of mercury. Enhanced Display mode only.
	Sample air temperature in °C or °F. Enhanced Display mode only.

2) Setting and Calibrating the Pump Flow Rate

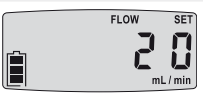
Ensure that the pump is set to Constant Flow mode and that the battery is fully charged.

Set up the sample train as specified in the sampling method and connect to the pump air inlet port. Connect a flow meter such as a Defender primary flow calibrator to the inlet of the sample train.

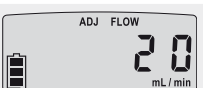
Press [▲▼] to start the pump running.

Press ✳ ▲ ▼ ✳. The LCD screen will show the flow rate setting screen with '**SET**' flashing.

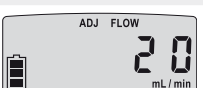
Use the ▲ and ▼ buttons to set the required flow rate in millilitres per minute on the LCD screen.



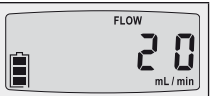
When the required flow rate is set press the ✳ button to display the flow rate adjust screen, with '**ADJ**' flashing.



Set the flow calibrator to take continuous readings, and observe the indicated flow rate. Use the ▲ and ▼ buttons to adjust the pump flow rate up or down, to precisely calibrate the required flow rate.



When the flow rate has been satisfactorily calibrated press the ✳ button to return to RUN mode. The pump will now maintain the calibrated flow rate to within ±5%.



The pump run-time data is recorded during the flow rate setting and calibration operations. Before starting a sample run reset the run-time data.

3) Multiple Tube Sampling in Constant Flow Mode Using a Constant Pressure Controller

An alternative method to Constant Pressure mode for multiple tube sampling is to use a Constant Pressure Controller (CPC - SKC Part No. 224-26CPC-10). The CPC is a device that generates a constant back pressure of 10 inches of water at the outlet of the connected multiple tube holder.

Ensure that the pump is set to Constant Flow mode and set the pump flow rate to a level higher than the combined flow rates through the tubes. The pump flow rate does not need to be accurately calibrated.

Connect the CPC between the pump air inlet port and the multiple tube holder. The short length of tubing supplied with the CPC is connected to the pump and the multiple tube holder is connected to the side of the CPC marked “TO SAMPLE”.

The flow rate through the individual tubes can then be calibrated using the needle valves built into the multiple tube holder.

Constant Pressure mode provides built in constant pressure control for multiple tube sampling applications.

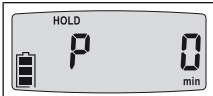
It is recommended to start with a pump back pressure setting of 10 inches of water. Once the pump back pressure is set, the tube flow rates are set using the needle valves built into the multiple tube holder. If it is not possible to set the flow through a given tube high enough, then increase the pump back pressure setting, until the required flow rate can be acheived.

Note that the combined flow rate through all of the tubes should not exceed 200 ml/min, and the pump back pressure setting should not exceed 20 inches of water. Before starting sampling check that the pump can run for the required sample duration at the combined flow rate and back pressure.

Constant Pressure mode is indicated by a '**P**' on the pump LCD screen.

1) Viewing the Run-Time Data

Press ✳ to scroll through the available run-time data screens:

	Elapsed run time since last reset in minutes up to 999 minutes (approximately 16 hours). Above 999 minutes display reverts to 0 minutes and continues to count.
	Pump back pressure in inches of water or millimetres of mercury.
	Sample air temperature in °C or °F. Enhanced Display mode only.

2) Setting the Pump Back Pressure

Ensure that the pump is set to Constant Pressure mode and that the battery is fully charged.

Set up the sample train as specified in the sampling method and connect to the pump air inlet port.

Press [▲▼] to start the pump running.

Press ✳▲▼✳. The LCD screen will show the back pressure setting screen with '**SET**' and '**P**' flashing.

Use the ▲ and ▼ buttons to set the required back pressure in inches of water or mm of mercury on the LCD screen.

When the required back pressure has been set press the ✳ button to return to RUN mode. The pump will now maintain the back pressure to within ±0.5 inches of water. The individual tube flow rates can now be calibrated.

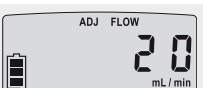
The pump run-time data is recorded during the flow rate setting and calibration operations. Before starting a sample run reset the run-time data.

The 210-1003MTX twin port Pocket Pump is designed for through flow applications such as bag sampling. Refer to the pump diagram on page 8 for identification of the inlet and outlet ports.

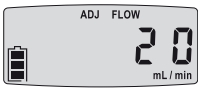
1) Constant flow mode sampling

Constant flow mode compensation performance: The pump flow rate will be within ±5% at flow rates up to 200 ml/min, inlet back pressure up to 20 inches of water and outlet pressure up to 3.0 inches of water maximum.

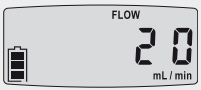
To set the pump up for constant flow mode bag sampling applications:

Ensure that the pump is set to Constant Flow mode and that the battery is fully charged.
Determine the required sample volume and sample duration. The required pump flow rate can be calculated: Flow Rate = Sample Volume ÷ Sample Duration
Connect a flow meter such as a Defender primary flow calibrator to the inlet of the Pocket Pump.
Press [▲▼] to start the pump running.
Press ⚹ ▲ ▼ ⚹. The LCD screen will show the flow rate setting screen with '**SET**' flashing. Use the ▲ and ▼ buttons to set the required flow rate in millilitres per minute on the LCD screen.
When the required flow rate is set press the ⚹ button to display the flow rate adjust screen, with '**ADJ**' flashing. 

Set the flow calibrator to take continuous readings, and observe the indicated flow rate. Use the ▲ and ▼ buttons to adjust the pump flow rate up or down, to precisely calibrate the required flow rate.



When the flow rate has been satisfactorily calibrated press the ✳ button to return to RUN mode. The pump will now maintain the calibrated flow rate to within ±5%.



The pump run-time data is recorded during the flow rate setting and calibration operations. Before starting a sample run reset the run-time data.

Connect the pump outlet to the sample bag inlet. Take the sample train to the sample location. Open the bag inlet valve.

Press [▲▼] to run the pump and begin sampling.

When the timer display on the pump reaches the required sample duration to fill the bag, press [▲▼]to put the pump into HOLD mode and stop sampling. Close the sample bag inlet valve.

Alternatively, if the DataTrac software is available, the required flow rate and run time can be programmed into the pump, enabling the pump to automatically stop when the required air volume has been sampled.

2) Constant pressure mode sampling

With the Pocket Pump set to constant pressure mode it is possible to obtain a stable pump flow rate with variable outlet back pressures (up to 30 inches of water). An adjustable flow restrictor at the pump inlet is required to set the desired flow rate. Note that once the required flow rate has been set, the sample train inlet flow restriction must remain constant during sampling.

Constant pressure mode compensation performance: With a constant inlet restriction of 5 inches of water, the pump flow rate will be within ±5% with outlet back pressure of 30 inches of water up 100 ml/min flow rate, and with outlet back pressure of 20 inches of water up to 200 ml/min flow rate.

To set the pump up for constant pressure mode through flow sampling applications:

Ensure that the pump is set to Constant Pressure mode and that the battery is fully charged. Connect the sample train including the adjustable flow restrictor to the pump air inlet port.	
Press [▲▼] to start the pump running.	
Press ⚹▲▼⚹. The LCD screen will show the back pressure setting screen with '**SET**' and '**P**' flashing.	
Use the ▲ and ▼ buttons to set a suitable back pressure in inches of water or mm of mercury, e.g. 5.0 inches of water (or higher if the inlet sample train is more restrictive), on the LCD screen.	

When the required back pressure has been set press the ✳ button to return to RUN mode. The pump will now maintain the back pressure to within ±0.5 inches of water.

Connect a flow meter such as a Defender primary flow calibrator to the inlet of the sample train and set the flow calibrator to take continuous readings.

To calibrate the sample flow rate adjust the flow restrictor on the pump inlet. Note that the pump corrects the inlet back pressure slowly, so small adjustments of the flow restrictor must be made.

Once the required flow rate has been calibrated the pump will compensate for changes in the outlet pressure by maintaining a constant inlet back pressure condition.

Press [▲▼] to put the pump into HOLD mode and disconnect the flow calibrator from the sample train inlet.

The pump run-time data is recorded during the back pressure setting and flow calibration operations. Before starting a sample run reset the run-time data.

Contact SKC Limited for advice on specific constant pressure mode sampling applications.

Possible Fault	Corrective Action
Battery pack will not charge	• Check the battery charger by trying it with a different battery pack. Replace the battery charger if required. • Check the battery pack by connecting it to a known good battery charger. If the battery pack still will not charge replace the battery pack.
Pump will not operate	• Check for faulty battery pack by trying a known good battery pack. Replace the battery pack if required.
Pump flow faults continuously	• Sample tube back pressure too high. Try a lower flow rate and/or a less restrictive sample tube if the sampling method being used allows this. • Pump particulate filter is blocked (appears black). Replace the particulate filter. • Tubing blocked or crimped. Replace tubing.
Pump cannot acheive required flow rate	• Battery pack voltage low. Fully charge the battery pack. • Sample tube back pressure too high. Try a lower flow rate and/or a less restrictive sample tube if the sampling method being used allows this. • Pump mechanism leaking. Contact SKC Ltd customer services for assistance.

Possible Fault	Corrective Action
Pump stops due to low battery before the end of the required sample period	• Battery pack not fully charged before starting sample run. Ensure battery pack is fully charged before starting a sample run. • Battery pack has reduced capacity as it nears end of life. Replace the battery pack. • Sample tube back pressure too high. Try a lower flow rate and/or a less restrictive sample tube if the sampling method being used allows this.

Battery Charging

- Charge battery pack fully before first use to ensure optimum performance.
- Full battery capacity will be acheived after 2 to 3 full charge / discharge cycles.
- Use only SKC approved charger designated for this battery pack. Use of a non-SKC approved charger may impair battery performance or even cause irrepairable damage, and will invalidate the battery pack warranty.

Battery Performance

- Charging temperature - For optimum performance charge NiMH batteries between 0 and +40°C.
- Do not overcharge - For optimum performance disconnect battery pack from charger after 24 hours.
- Discharge temperature - For optimum performance discharge NiMH batteries between -10 and +45°C (refer also to pump specifications on page 3 for other limitations on operating temperature for intrinsically safe applications).

Battery Maintenance

- Battery cycling during regular use - To maintain optimum capacity during regular battery use, cycle battery once a month. Run pump until low battery shutdown occurs, then fully charge battery.
- Long term storage and highly infrequent use -
  1. Charge battery fully prior to long term storage.
  2. Store in a cool, dry place at temperature between 0 and 30°C.
  3. Recharge battery at least once a year (or more frequently if stored at temperature above 30°C).
  4. Cycle battery 2 to 3 times after long term storage to restore optimum capacity.

Battery Testing

1. Connect SKC approved charger to battery pack. If charger indicator LED illuminates, battery pack charger input is ok. If charger LED does not illuminate, battery pack input fuse is blown - Replace battery pack.
2. Leave battery pack connected to charger to fully charge.
3. If pump does not function at all after full charge of battery pack, battery pack output fuse has blown, or battery cells have failed or are at end of life - Replace battery pack.
4. If pump functions after full charge of battery pack but gives significantly reduced run times before low battery shutdown, battery cells are failing or are at end of life - Replace battery pack.

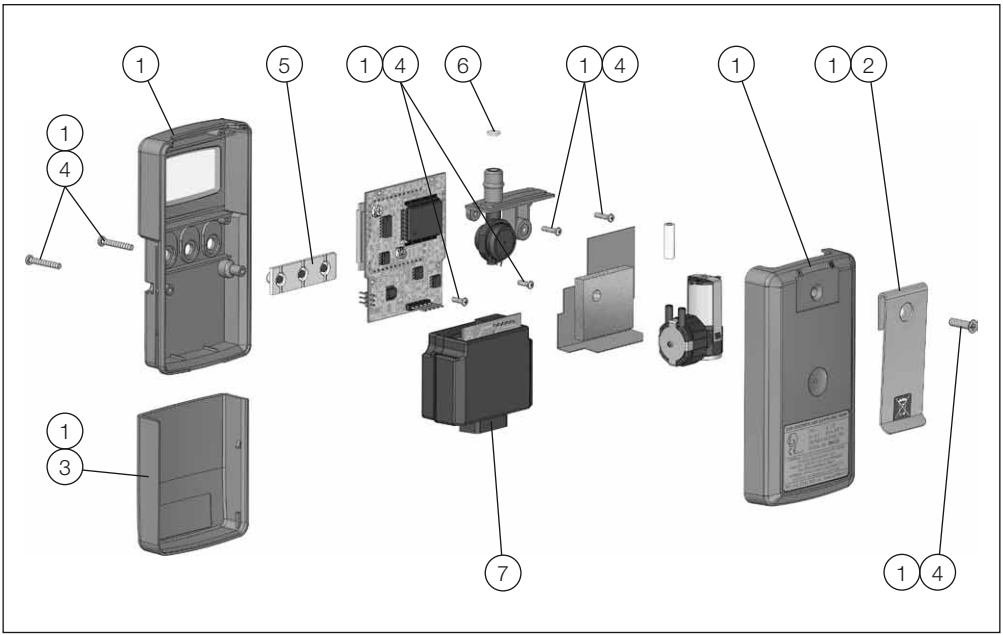
Battery Replacement

Refer to the pump component diagram on page 28. To remove the battery pack slide down and remove the slide cover. Unfasten the two screws revealed beneath the slide cover. Unfasten the screw that secures the belt clip and remove the belt clip and rear case, to reveal the battery pack. Carefully pull the battery pack upwards out of the pump case.

Fit the replacement battery pack, taking care to ensure that the battery connector engages with the pins of the connector on the pump PCB. Re-assemble the pump case in the reverse of the above procedure. Charge the new battery pack fully before use.

Battery Disposal

- The EC Battery Directive and equivalent legislation in other countries requires that all batteries and battery packs are disposed of correctly at the end of their working life. This means that they must be collected and treated separately from other waste.
- Please ensure that any end-of-life SKC battery packs are collected and recycled or disposed of correctly.


1
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4

Item	Part No.	Description
1	P20120GY	Pump case kit including sliding keypad cover, belt clip and screws
2	P51821	Belt clip
3	P20131GY	Sliding keypad cover
4	P21001	Pump case screw kit
5	P79360	Keypad
6	P40010	Inlet filter (pack of 10)
7	P20129MTX	Battery pack 2.4V 1.0Ah NiMH

If the required part is not listed, contact SKC customer care on +44 (0) 1258 480188.

Note: Table item numbers correspond to the ringed numbers shown in the figure on page 28 of this manual.

Part No.	Description
	Key Accessories
223-229A	Single battery charger / mains adaptor 100-240V ~ 50/60Hz supply with UK/EU/US/AUS mains plugs
223-107A	Five station battery charger 100-240V ~ 50/60Hz supply with UK/EU/US/AUS mains plugs
717-510LA	Defender primary calibrator 5 - 500 ml/min accuracy ±1% of reading
877-90K	Pocket Pump DataTrac software package including software CD, PC adapter and cable
	Gas / Vapour Sampling Accessories
224-26-CPC10	Constant pressure controller for Pocket Pump
222-3-1	Single tube holder and protective cover type A for tubes up to 6mm diameter x 70mm long
222-3L-1	Single tube holder and protective cover type B for tubes up to 8mm diameter x 110mm long
222-3XL-1	Single tube holder and protective cover type C for tubes up to 10mm diameter x 150mm long
222-3D-1	Tandem tube holder type T for colour detector tubes up to 115mm long plus trap tube
224-29T	Tandem protective cover for type T tube holder
222-3D-2	Trap tube (pack of 10)
224-26-02	Double adjustable low flow adapter / tube holder
224-26-03	Treble adjustable low flow adapter / tube holder
224-26-04	Quadruple adjustable low flow adapter / tube holder
224-29A	Protective cover type A 6mm diameter x 70mm
224-29B	Protective cover type B 8mm diameter x 110mm

Part No.	Description
800-01200	Tube tip breaker
226-01	Anasorb CSC coconut charcoal tube 2 part 6mm diameter x 70mm GS (pack of 50)
226-119	Silica gel tube 2 part 6mm diameter x 110mm GS (pack of 100)

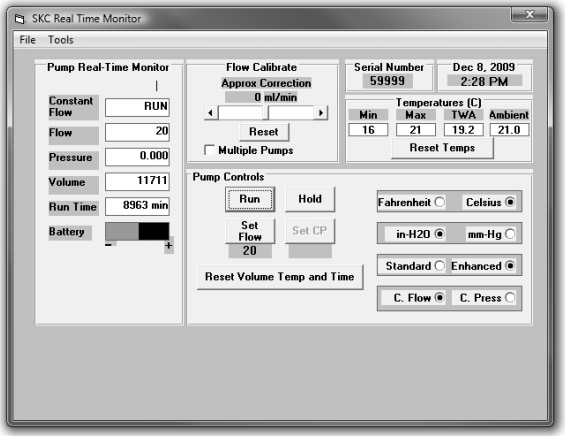
If the required item is not listed, contact your supplier or SKC sales on +44 (0) 1258 480188.

SKC provide an extensive range of sampling media, including filters, sorbent tubes and impingers. A full selection can be found in the current SKC catalogue and at www.skcltd.com

With the optional DataTrac Software accessory, the Pocket Pump is programmable using a PC. DataTrac simplifies chain-of-custody reporting by allowing users the option of programming a complete running sequence, delayed start, timed stop, and intermittent sampling, all at different flow rates. Time and sample volume are continuously updated in memory. There is no need to perform lengthy calculations; DataTrac does it for you. The advanced information retrieval system is specifically designed to store data and provide chain-of-custody information. Fault features allow storage of historical data in memory that can be retrieved up to 24 hours after shutdown. The full DataTrac user's manual is included on the software CDROM.

Features

- Program a sampling operation from a PC.
- Calibrate the Pocket Pump's flow to a primary standard.
- Display the operating mode including Constant Flow or Constant Pressure, temperature, run-time, and battery status.
- Create and save a Pocket Pump program without the pump being connected to a PC.
- Program up to fourteen sampling sequences, each with different flow rates.



- Download pump run-time data and history to a PC.
- Create chain-of-custody information using the sample set-up feature.
- Print a history file containing pump run-time data.
- Print a worker exposure profile containing run-time data and the pump's history.

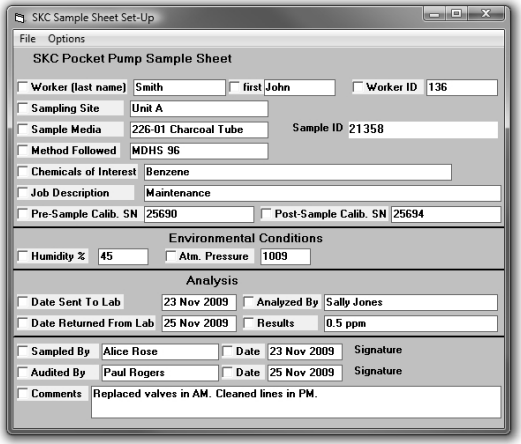
DataTrac System Requirements

- CDROM drive
- 800 x 600 (SVGA) resolution minimum
- 9-pin serial port, or alternatively a USB to 9-pin serial port adaptor (not available from SKC Ltd)
- Mouse
- Microsoft® Windows® version 98 or higher

Ordering information:

Includes software CD, PC adapter, and cable.

Catalogue number 877-90K



INERIS

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres Directive 94/9/EC**

(1) EC-TYPE EXAMINATION CERTIFICATE

(3) Number of the EC type examination certificate: **INERIS 03ATEX0177X**

(4) Protective system or equipment:

POCKET PUMP TYPE 210-1002TX

(5) Manufacturer: **SKC LTD**

(6) Address: UNIT 11 SUNRISE PARK
HIGHER SHAFTESBURY ROAD
BLANDFORD FORUM
GB - DORSET DT11 8ST

(7) This protective system or equipment and any other acceptable alternative of this one are described in the appendix of this certificate and the descriptive documents quoted in this appendix.

(8) The INERIS, notified body and identified under number 0080, in accordance with article 9 of Council Directive 94/9/EC of the 23rd March 1994, certifies that this protective system or equipment fulfils the Essential of Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, described in appendix II of the Directive.

The examinations and the tests are consigned in official report No P40972/03.

(9) The respect of the Essential Health and Safety Requirements is ensured by:

- conformity with:

EN 50 014 of June	1997 + Amendments 1 and 2
EN 50 020 of June	2002
EN 50 284 of January	1999
EN 50 303 of January	2000

- specific solutions adopted by the manufacturer to meet the Essential Health and Safety Requirements described in the descriptive documents.

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Parc Technologique Alata BP 2 F-60550 Verneuil-en-Halatte
tél +33(0)3 44 55 66 77 fax +33(0)3 44 55 66 99 internet www.ineris.fr
Institut national de l'environnement industriel et des risques
Etablissement public à caractère industriel et commercial - RCS Senlis B 381 984 921- Siret 381 984 921 00019 - APE 7438

EC-Type Examination Certificate N° INERIS 03ATEX0177X

(10) Sign X, when it is placed following the Number of the EC type examination certificate, indicates that this equipment and protective system is subjected to the special conditions for safe use, mentioned in the annex of this certificate.

(11) This EC type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system, these are not covered by this certificate.

(12) The marking of the equipment or the protective system will have to contain:

Ex I M1	EEx ia I
Ex II 1 G	EEx ia IIB T4

Verneuil-en-Halatte, 2003 12 22

T. HOUEIX
Engineer at the Laboratory of Certification of ATEX Equipment

Director of the Certifying Body,
By delegation
B. PIQUETTE
Deputy manager of Certification

ATMOSPHERES EXPLOSIVES
ORGANISME NOTIFIE
INERIS
NOTIFIED BODY
EXPLOSIVE ATMOSPHERES

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A full size copy of the certificate can be obtained from SKC customer service on request, for which a nominal charge may be levied.

(13) **ANNEX**

(14) EC TYPE EXAMINATION CERTIFICATE N° INERIS 03ATEX0177X

(15) **DESCRIPTION OF THE EQUIPMENT OR THE PROTECTIVE SYSTEM**

The pocket pump type 210-1002TX is a portable pump which provides for the programming, monitoring and measuring of gas flow.

To carry out these functions the pocket pump contains a printed circuit card on which electronic components are implanted. This card is enclosed in a plastic casing.

The informations are presented on an LCD screen.

The pocket pump type 210-1002TX has a jack plug (power connector) which, when outside explosive atmospheres, allows for connection with a battery charger, and a connector with four pins marked I, J, K, L can allow connection in explosive atmospheres with equipment certified as intrinsically safe.

PARAMETERS RELATING TO THE SAFETY

The maximum input characteristics on power connector are :

Ui (V)	Ii (A)	Ci (nF)	Li (mH)
11	0,850	0	0

The maximum output characteristics on 4 pins connectors I, J, K, L are :

To use in gassy mines :

Uo (V)	Io (A)	Co (µF)	Lo (µH)
9	2,44	1426,3	73

To use in explosible atmospheres group IIB :

Uo (V)	Io (A)	Co (µF)	Lo (µH)
9	2,44	76,3	65

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EC-Type Examination Certificate N° INERIS 03ATEX0177X

MARKING

Marking must be readable and indelible; it must comprise the following indications:

- **SKC LTD**
  UNIT 11 SUNRISE PARK
  HIGHER SHAFTESBURY ROAD
  BLANDFORD FORUM
  GB - DORSET DT11 8ST
- 210-1002TX
- INERIS 03ATEX0177X
- (serial number)
- (Year of construction)
- Ex I M1 EEx ia I
- Ex II 1 G EEx ia IIB T4

The whole of marking can be carried out in the language of the country of use.

The protective apparatus or system must also carry the marking normally envisaged by the standards of construction which relate to it.

ROUTINE EXAMINATIONS AND TESTS

None.

(16) DESCRIPTIVE DOCUMENTS

The report is composed of the documents quoted hereafter, constituting the descriptive file of the apparatus, object of this certificate.

- Operating Instructions 210-1002TX dated and signed on 2003.12.19.
- Document : ineris-1 version n°2 dated and signed on 2003.07.01.
- Document : ineris-2 version n°2 dated and signed on 2003.07.01.
- Document : ineris-3 version n°1 dated and signed on 1996.10.04.
- Document : ineris-4 version n°1 dated and signed on 1996.10.04.
- Nomenclature : PPB6CPL (2 pages) vers. n°6 dated and signed on 1996.05.16.
- Nomenclature : PPMCPL (2 pages) vers. n°1 dated and signed on 1995.07.16.
- Nomenclature : PPPCBCPL (4 pages) vers. n°4 dated and signed on 1995.07.16.
- Drawing : 0108C044 version n°4 dated and signed on 1995.04.04.
- Drawing : 0108C056 version n°6 dated and signed on 1996.05.12.
- Drawing : 210-1002TX (5 pages) version n°4 dated and signed on 2003.07.01.
- Drawing : 79512 version n°4 dated and signed on 1995.07.16.
- Drawing : P20129TX (2 pages) version n°10 dated and signed on 2003.07.01.
- Drawing : SKC79514 version n°6 dated and signed on 1996.05.12.

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A full size copy of the certificate can be obtained from SKC customer service on request, for which a nominal charge may be levied.

(17) SPECIAL CONDITIONS FOR SAFE USE

The connector for recharging the accumulators (power connector) may be used only outside explosive atmospheres.

The equipment connected to the pins I, J, K, L, must be certified as intrinsically safe for use in gassy mines or explosive atmospheres of Group IIB and its association with the pocket pump type 210-1002 must be compatible from the point of view of intrinsic safety.

The maximum input characteristics Ui , Ii of these equipments must be equal or greater than Uo and Io characteristics which are defined in "parameter relating to the safety" and the maximal characteristics Ci and Li of these equipments must be equal or lower than Co and Lo characteristics which are defined in " parameters relating to the safety".

The another special conditions are defined in operating instructions.

(18) ESSENTIAL REQUIREMENTS OF SAFETY AND HEALTH

The respect of the Essential Health and Safety Requirements is ensured by:

- conformity to the European standards EN 50 014, EN 50 020, EN 50 284 and EN 50 303.
- the whole of the provisions adopted by the manufacturer and described in the descriptive documents.

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Addition No 01 to the original EC-type examination certificate INERIS 03ATEX0177X

ADDITION

(3) **INERIS 03ATEX0177X/01**

(4) POCKET PUMP TYPE 210-1002TX

(5) Made by SKC LTD

(15) - PURPOSE OF THE ADDITION

Possible mechanical modification of the envelope and the pump to introduce the new type 210-1003TX.

Update of the descriptives documents

PARAMETERS RELATING TO THE SAFETY

The parameters relating to the safety are unchanged.

MARKING

The marking defined in the basic certificate is unchanged.

ROUTINE EXAMINATIONS AND TESTS

The routine verifications and tests stipulated by the basic certificate are unchanged.

(16) - DESCRIPTIVE DOCUMENTS

The document referred to below, constitutes the file describing the modifications of the apparatus and forming the subject of the present addition.

Certification file dated and signed on 2005.06.06 with 12 drawings and 2 parts list whose references are as follows:.

Drawings ref : 210-1003TX rev.A 1/4 to 4/4 on 2005.05.26
Drawings ref : 210-1002TX rev.A 1/4 to 4/4 on 2005.05.25
Drawing ref : 013-01-008 rev.A on 2005.01.14
Drawing ref : 013-01-012 rev.A on 2005.06.01
Drawing ref : 013-02-040 rev.A on 2005.05.27
Drawing ref : 006-06-005 rev.A on 2005.06.01
Parts List (2 pages) ref : PPMCPL on 2005.05.31
Parts List (2 pages) ref : PPMCPL-1003TX on 2005.05.31

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A full size copy of the certificate can be obtained from SKC customer service on request, for which a nominal charge may be levied.

Addition No 01 to the original EC-type examination certificate INERIS 03ATEX0177X

(17) - SPECIAL CONDITIONS FOR SAFE USE

The special conditions for safe use defined in the basic certificate are unchanged.

(18) - ESSENTIAL REQUIREMENTS OF SAFETY AND HEALTH

The respect of the Essential Health and Safety Requirements defined in the basic certificate is unchanged.

Verneuil-en-Halatte, 2005.06.14

T. HOUEIX
Engineer at the Laboratory of Certification of ATEX Equipment

Director of the Certifying Body,
By delegation
B. PIQUETTE
Deputy manager of Certification

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Addition No 02 to the EC-type examination certificate INERIS 03ATEX0177X

ADDITION

(3) **INERIS 03ATEX0177X/02**

(4) **POCKET PUMP TYPE 210-1002TX**

(5) **Made by SKC LTD**

(15) PURPOSE OF THE ADDITION

- Taken into account by the new certification standards :
  - EN 60079-0 : 2006
  - EN 60079-11 : 2007
  - EN 60079-26 : 2007
- Use of a new material for the envelope.
- Use of the new pack of battery P20129MTX.
- Introduction of the new types of pump (type 210-1002MTX and type 210-1003MTX).

PARAMETERS RELATING TO THE SAFETY

The parameters relating to the safety are unchanged.

MARKING

The marking is modified as follows :

SKC LTD
UNIT 11 SUNRISE PARK
HIGHER SHAFTTESBURY ROAD
GB - DORSET DT11 8ST

210-1002TX or 210-1002MTX or 210-1003TX or 210-1003MTX
INERIS 03ATEX0177X
(serial number)
(year of construction)
Ex I M1 Ex ia I
Ex II 1 G Ex ia IIB T4

WARNING : USE ONLY WITH P20129TX BATTERY PACK (for types 210-1002TX and 210-1003TX) or P21029MTX (for types 210-1002MTX and 210-1003MTX).

WARNING : DO NOT CHARGE THE BATTERY IN HAZARDOUS LOCATION.

The whole of marking can be carried out in the language of the country of use.

The equipment or protective system must also carry the marking normally envisaged by the standards of construction which relate to it.

Only the entire document may be reprinted. IM1340AC

A full size copy of the certificate can be obtained from SKC customer service on request, for which a nominal charge may be levied.

ROUTINE EXAMINATIONS AND TESTS

None.

(16) DESCRIPTIVE DOCUMENTS

The descriptive documents quoted hereafter constitute the technical documentation describing the modification of the equipment, subject of this present addition.

-	Drawing SKC-IS-0031 Rev.1	dated on 2009/08/20	signed on 2010/01/14.
-	Drawing SKC-IS-0032 Rev.1	dated on 2009/08/21	signed on 2010/01/14.
-	Drawing SKC-IS-0033 Issue.1	dated on 2009/08/20	signed on 2010/01/14.
-	Drawing SKC-IS-0034 1/3 to 3/3 Rev.1	dated on 2009/08/24	signed on 2010/01/14.
-	Drawing SKC-IS-0035 Rev.3	dated on 2009/10/20	signed on 2010/03/23.
-	Drawing SKC-IS-0036 Rev.1	dated on 2009/08/21	signed on 2010/01/14.
-	Drawing SKC-IS-0037 1/4 to 4/4 Rev.2	dated on 2010/03/04	signed on 2010/03/23.
-	Drawing SKC-IS-0038 1/4 to 4/4 Rev.2	dated on 2010/03/04	signed on 2010/03/23.
-	Operating instructions	dated and signed on 2010/01/14.	

(17) SPECIAL CONDITIONS FOR SAFE USE

The special conditions for safe use are unchanged.

(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS

The respect of the Essential Health and Safety Requirements is modified, it is ensured by :

- Conformity to the European standards : EN 60079-0, EN 60079-11, EN 60079-26 and EN 50 303.
- The whole of the provisions adopted by the manufacturer and described in the descriptive documents.

Verneuil-en-Halatte, 2010 04 26

ATMOSPHERES EXPLOSIVES ORGANISME NOTIFIÉ INERIS NOTIFIED BODY EXPLOSIVE ATMOSPHERES

Director of the Certifying Body,
By delegation
D. CHARPENTIER
Deputy Manager of Certification

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www.skcltd.com

Addition No 03 to the EC-type examination certificate INERIS 03ATEX0177X

ADDITION

(3) INERIS 03ATEX0177X/03

(4) POCKET PUMP TYPE 210-1002TX

(5) Made by SKC LTD

(15) PURPOSE OF THE ADDITION

Possibility of using a new resin (epoxy resin PX804C) for the battery pack compound.

PARAMETERS RELATING TO THE SAFETY

The parameters relating to the safety are unchanged.

MARKING

The marking is unchanged.

ROUTINE EXAMINATIONS AND TESTS

None.

(16) DESCRIPTIVE DOCUMENTS

The descriptive document quoted hereafter constitutes the technical documentation describing the modification of the equipment, subject of this present addition.

- Drawings SKC-IS-0034 1/3 to 3/3 rev.3 dated and signed on 2011.01.10

(17) SPECIAL CONDITIONS FOR SAFE USE

The special conditions for safe use are unchanged.

Only the entire document may be reprinted. IM1340AC Sheet 1 / 2

A full size copy of the certificate can be obtained from SKC customer service on request, for which a nominal charge may be levied.

Addition No 03 to the EC-type examination certificate INERIS 03ATEX0177X

(18) **ESSENTIAL SAFETY AND HEALTH REQUIREMENTS**

The respect of the Essential Health and Safety Requirements is unchanged.

Verneuil-en-Halatte, 2011.02.10

ATMOSPHERES EXPLOSIVES ORGANISME NOTIFIE INERIS NOTIFIED BODY EXPLOSIVE ATMOSPHERES

Director of the Certifying Body,
By delegation
T. HOUEIX
Certification Officer
Certification Division

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Sheet 2 / 2

A full size copy of the certificate can be obtained from SKC customer service on request, for which a nominal charge may be levied.

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Limited One Year Warranty

1. SKC warrants that this instrument, and each of its component parts, provided for occupational health and safety applications is free from defects in workmanship and materials under normal use for a period of one (1) year. This warranty DOES NOT cover any claims due to abuse, misuse, neglect, alteration, or accident, or use in application for which the instrument was either not designed or not approved by SKC, or, due to the buyer's failure to maintain normal maintenance, improper selection or misapplication. The warranty also DOES NOT cover any claims due to the use of a non-SKC approved charger to charge the battery pack. This warranty shall further be void if changes or adjustments to the instrument are made by a person other than an employee of the seller or, if the operating instructions furnished at the time of installation are not complied with.

2. SKC hereby expressly disclaims all warranties either expressed or implied, including any implied warranties of merchantability or fitness for a particular purpose and neither assumes nor authorises any person to assume for it any liability in connection with the sale of these instruments. No description of the goods being sold has been made a part of the basis of the bargain or has created or amounted to an express warranty that the goods will conform to any such description. Buyer shall not be entitled to recover from SKC any consequential damages; damages to property, damages for loss of use, loss of time, loss of profits or income or any other incidental damages. Nor shall the Buyer be entitled to recover from SKC any consequential damages resulting from defect of the instrument.

3. This warranty extends only to the original purchaser of the warranted instrument during the term of the warranty, the buyer may be required to present proof of purchase in the form of a paid receipt for the instrument.

4. In the event of a defect, malfunction, or other failure of the instrument not caused by any misuse or damage to the instrument while in the possession of the Buyer, SKC will remedy the failure or defect without charge

to the buyer. The remedy will consist of service or replacement of the instrument, or refund of the purchase price, at the option of SKC. However, SKC will not elect refund unless it is unable to provide replacement and repair is not commercially practicable.

5. The terms of this warranty begin on the date the instrument is delivered to the Buyer and continue for a period of one (1) year.

6(a) To obtain performance of any obligation under this warranty, the buyer shall return the instrument, freight prepaid to SKC at the following address:-

SKC Limited
11 Sunrise Park
Higher Shaftesbury Road
Blandford Forum
Dorset DT11 8ST
t: 44 (0) 1258 480188
f: 44 (0) 1258 480184

6(b) To obtain further information on the warranty performance contact SKC.

7. This warranty is provided under English law.

8. No other warranty is given by SKC in conjunction with this sale.

The disclaimers and limitations shall not affect the statutory rights of a consumer.

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